

INVESTIGATION INTO THE CAUSES OF CLAIMS IN EGYPTIAN BUILDING CONSTRUCTION

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Construction claims have become a significant feature in many construction projects. The understanding of the causes of claims vital to avoiding or reducing claims in the construction industry. Therefore, the objective of this paper is to investigate the causes of claims Egyptian construction. This is achieved through identifying a list of causes from international literature, then modifying the list to suit Egyptian construction through expert interviews. Three case studies were utilized to further investigate the occurrence of each cause in the project. The outcomes of the case studies were analyzed using Pareto Analysis. Three causes were found to be the vital few that are responsible for about 80% of causes. These causes are: “variations initiated by owner / consultant” (almost half of all causes); “inferior quality of design, drawings and / or specifications” (about 21% of causes); and “delays of approval of shop drawings, instructions and decision making” (nearly 8%).

Keywords: case studies, claims, Egypt, interview, Pareto analysis. .

INTRODUCTION

The term "construction claim" is commonly used to describe any application by the contractor for payments not under the ordinary contract payment provisions, as when the contractor confronts additional costs and/or delays (Revay 1990). Claims are considered one of the most importance items that could cause a harmful effect in organizations and for the construction industry. The submission of claims has become common practice and a significant feature in many construction projects. Claims can be frequent in large projects and can cause budgetary difficulties to owners. They may cause financial difficulties, restriction of cash flow, and loss of liquidity to contractors. Understanding of the causes of claims is vital to avoiding or reducing claims in the construction industry. The causes of claims have been researched in a plethora of researches worldwide Adrian (1993); Al-Momani (2000); Diekmann and Nelson (1985); Jergeas *et al.* (1994); Kumaraswamy and Yogeswaran (1998); Levin (1998); McMullan (2003); Semple *et al.* (1994). Yet little literature in Egypt has researched claims and their causes. Hanna (2004) researched a case study for a hotel project in Cairo, Egypt and provided guidance important issues in managing claims. El-Wakil (2006) developed a computerized construction decision support system for claims. Awad (2005) studied measuring the efficiency of construction claim administration in construction companies in Egypt. Mostafa (2006) researched the techniques of minimizing claims problems and disputes in construction projects in Egypt, and investigated common causes of claims arising from contract clauses.

The objective of this paper is to investigate the causes of claims in Egyptian construction. The identification of such causes can assist in preventing claims. This is achieved through identifying a list of causes from international literature, then modifying the list to suit Egyptian construction through expert interviews. Three case studies were utilized to further investigate the occurrence of each cause in the project. The outcomes of the case studies were analyzed using Pareto Analysis. Conclusion and recommendations were discussed at the end of the paper. The scope of the paper is limited to the type of case studies investigated, which is the refurbishing and construction of buildings for the private sector in Egypt.

IDENTIFICATION OF CAUSES IN INTERNATIONAL LITERATURE

A plethora of authors have researched claims in international literature. The causes of claims in Table 1 have been synthesized from literature.

Table 1: Causes of Claims Synthesized From Literature

No.	Causes of claims	Reference
1	Delays in payments to contractors and resulting cash problems during construction	Al-Momani (2000)
2	Inferior quality of design, drawings and/or specifications,	Jergeas <i>et al.</i> (1994); Diekmann and nelson (1985); Jergeas and Hartman (1994); Al-Momani (2000); McMullan (2003)
3	The contract documents have errors, defects, omissions, and poor management	Jergeas and Hartman (1994); Kumaraswamy and Yogeswaran (1998)
4	Delays of approval of shop drawings, instructions and decision making	Kumaraswamy and Yogeswaran (1998)
5	Restricted access	Semple <i>et al.</i> (1994) Jergeas and Hartman (1994);
6	Faulty and/or late owner-supplied equipment and material	Jergeas and Hartman (1994)
7	Unbalanced bidding , underestimation and incompetence of contractors	Jergeas and Hartman (1994);
8	Stakeholders involved in the project	Al-Momani (2000); McMullan (2003)
9	Relatively low profitability of the construction industry	Adrian (1993)
10	Variations initiated by the owner/consultant (additive/deductive)	Semple <i>et al.</i> (1994); Jergeas and Hartman (1994); Diekmann and nelson (1985); Kumaraswamy and Yogeswaran (1998); Al-Momani (2000); McMullan (2003)
11	Acceleration and stop-and-go operations	Semple <i>et al.</i> (1994); Jergeas and Hartman (1994)
12	Insufficient time for bid preparation and Inadequate investigation before bidding	Jergeas and Hartman (1994);
13	Changed conditions	Al-Momani (2000); McMullan (2003)
14	Increased of complexity and scale of building process	Adrian (1993) and Levin (1998)
15	Weather	Semple <i>et al.</i> (1994); Kumaraswamy and Yogeswaran (1998); Al-Momani (2000)

MODIFICATION OF CAUSES FOR EGYPTIAN CONSTRUCTION

As a result of the special nature of the Egyptian market in terms of the project parties' attitudes and the cultural, political and business environment, causes of claims may differ from other countries worldwide. Since the causes of claims in Table 1 have been synthesized from international literature, these causes were reviewed by Egyptian experts to purge and modify the list in order to be more appropriate for the Egyptian construction. To realize the required objective, semi-structured interviews

were held with 10 experts, with experiences ranging from 15 to 36 years. The experts included contracting and consulting backgrounds and included: planners; planning, project controls, and design managers; project managers; and executive managers. A list of aforementioned causes, as illustrated in Table 1, was browsed with the experts and discussed in terms of sufficiency and appropriateness of the list of causes the Egyptian construction industry.

There was consensus among experts in canceling weather from the list of causes of claims, as weather in Egypt is rarely a cause of claims. Other causes were added by the experts as following: delay of owner representative/ consultant in inspecting work; unexpected changes in exchange, interest, and inflation rates; and unexpected changes in materials prices. The final list of modified causes of claims can be seen in Table 2.

Table 2: Modified Causes of Claims as Per Egyptian Construction

No.	Causes of claims
1	Delays in payments to contractors and resulting cash problems during construction
2	Inferior quality of design, drawings and / or specifications
3	The contract documents have errors, defects and omissions
4	Delays of approval of shop drawings, instructions and decision making
5	Restricted access
6	Faulty and / or late Owner-supplied equipment and material
7	Unbalanced bidding , underestimation and incompetence of contractors
8	Stakeholders involved in the project
9	Relatively low profitability of the construction industry
10	Variations initiated by the owner/consultant (additive/deductive)
11	Acceleration and stop-and-go operations
12	Insufficient time for bid preparation and inadequate investigation before bidding
13	Changed conditions
14	Increase of complexity and scale of building process
15	Delay of Owner representative/ consultant in inspection work
16	Unexpected changes in exchange, interest, and inflation rate
17	Unexpected change in materials prices

CASE STUDIES

Case studies have been used as a research tool for deep and narrow investigation into a certain topic. Commonly, case studies will employ triangulation in the case study itself, but it is essential to be aware of the validity of generalizing the findings of a case study research project (Fellows and Liu 2003 and Yin 2001). Case studies are used in this research as an investigative tool to identify the causes of claims in construction projects. The outcomes are not generalized, but provide insights into such causes. The structure of each case study includes a description of the background of the project, followed by an overview of each of the claims involved. The following three case studies are for a hotel in Sinai, a hotel in the North Coast and an administrative building in Cairo.

CASE STUDY 1

The project of concern is the renovation of a five star hotel in Dahab, Sinai. The owner of the hotel decided to contract a professional project management firm. The project was tendered using a unit price contract and via a short list of selected contractors, which had wide experiences in such a type of construction. The planned duration was 6 months and was delayed 130 days in actual construction. Also the original contract cost was 10.75 million Egyptian Pounds (EGP) and was increased to 12 million EGP. The contractor introduced 8 claims for the project. Following is a summary of each claim and its cause.

Claim no. 1: Type - Time

Special structural requirements lead to a structural modification which was delayed by the structural consultant. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 2: Type - Time and Cost

The excavation depth was increased due a clause in the specification that contractor must reach the old foundation level and connect it with the new foundations. The cause of this claim can be contributed to “Contract documents have errors, defects and omissions”.

Claim no. 3: Type - Time

The electromechanical consultant made a modification in the electrical design. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 4: Type - Time

The electromechanical consultant made modifications in the procedures referenced in the specifications for maintenance of air conditioning equipments. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 5: Type - Time and Cost

Due to the modification to adjust air conditioning in rooms, the electromechanical consultant asked to add an opening in a beam for air return. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 6: Type - Time and Cost

The architect and structural consultants asked to make a variation in the slabs and wall of suites. The cause of this claim can be contributed to “variations initiated by the owner/consultant”

Claim no. 7: Type - Time and Cost

The electromechanical consultant also changed the path of the air conditioning ducts. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 8: Type - Time

The architect had designed a small pool in the private garden of suites. However, within construction the owner asked to replace the constructed pools as designed by architect with smaller ones to mitigate the total cost of the project. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

CASE STUDY 2

The second case study concerned the renovation of a hotel in the Mediterranean North Coast. The project was tendered using a unit price contract and contractors were short listed from a selected list of contractors with wide experiences in such projects. The planned duration was 3 months that was increased by 79 days during construction. The contractor introduced 8 claims within the project. Following is a summary of each claim and its cause.

Claim no. 1: Type – Time and Cost

The structural consultant had identified 16 columns to be repaired, which turned out to be 135 columns during construction. The cause of this claim can be contributed to “changed conditions” and “inferior quality of design, drawings and / or specifications”.

Claim no. 2: Type - time

The architect changed the design of some room furniture components. The project manager studied the claim and determined concurrent delay, thus refusing the EOT. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 3: Type - Time

The architect had decided to use the old sanitary services which were found to be deteriorated during construction and the architect decided to replace all old ducts. The cause of this claim can be contributed to “variations initiated by the owner/consultant” and “inferior quality of design, drawings and / or specifications.

Claim no.4: Type - Cost

Due to the extra structural work nominated in claim no.1, some extra work resulted in reinstalling of walls and electrical works. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no.5: Type - Cost

The architect decided to choose a different type of bath and shower mixer than those nominated in the BOQ. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 6: Type - Time

The architect and owner decided to make changes to the project’s façade. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 7: Type – Time

Procurement of ceramic tiles was delayed by a supplier due to their special color. The cause of this claim can be contributed to “stakeholders involved in the project”.

Claim no. 8: Type - Time

The contractor submitted a claim for 10 days and clarified the cause of this claim by the delay in the approval of electrical and fire alarm shop drawing and fixtures. This affected the start and finish of these works. The cause of this claim can be contributed to “delays of approval of shop drawings, instructions and decision making”.

CASE STUDY 3

The project discussed in this case concerns the construction of an administrative building complex project in Nasr City, Cairo. The owner tendered the design as a competition between architectural / engineering offices and chose the design that best accomplished his requirements. The project was tendered using a unit price contract through an open tender for companies categorized as grade one companies. The planned duration was 30 month and was constructed in three phases. Construction stopped for 7 months, and the project’s consultant was replaced by a new consultant.

The contractor introduced 15 claims within the project. Following is a summary of each claim and its cause.

Claim no.1: Type - Time

Contact documents nominated a subcontractor responsible for the system of excavation. Through execution of the proposed system, some problems appeared and caused delays. The cause of this claim can be contributed to “stakeholders involved in the project” and “insufficient time for bid preparation and inadequate investigation before bidding”.

Claim no.2: Type - Time

As requested from the structural consultant, the foundation level was increased, after reaching the design depth. The depth of some pumps needed increase and some electromechanical problems required consideration. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 3: Type - Time

An earthquake had hit Egypt that caused some damage to site works. The cause of this claim is not found in the causes list.

Claim no. 4: Type – Time and Cost

The consultant instructed the contractor to construct a new water barrage in the lower basement. This lead to stoppage of work in the original barrage walls and also delayed part of the lower basement roof until the new design for this part had completed. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no. 5 Type - Time

The contractor asked the consultant to provide some details for columns and slabs of basement that required a delay of 28 days. The cause of this claim can be contributed to “inferior quality of design, drawings and / or specifications” and “delays of approval of shop drawings, instructions and decision making”.

Claim no.6: Type - Time

The consultant made modifications to the levels around the building that caused a delay in the construction of the upper basement slab. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

Claim no.7: Type - Time

The contractor suggested changing the structural system. The owner agreed to change the system and was redesigned with the consultant’s approval. The cause of this claim can be contributed to “Inferior quality of design, drawings and / or specifications”.

Claim no. 8: Type – Time and Cost

The changes that happened in the basements slabs lead to an increase in the percentage of reinforcing steel in the concrete cubic meter than specified in the design drawings. The cause of this claim can be contributed to “Inferior quality of design, drawings and / or specifications” and “variations initiated by the owner / consultant”.

Claim no. 9: Type – Time and cost

The consultant gave some notes on the electromechanical workshop drawings which had already been approved. The contractor considered these notes as a stoppage order as the notes will need time to execute. The cause of this claim can be contributed to “Inferior quality of design, drawings and / or specifications”, “delay of approval of shop drawings, instructions and decision making” and “variations initiated by the owner/consultant”.

Claim no. 10: Type – Time

Due to the decision taken by the government to change the foreign exchange rate, the contractor introduced a claim asking for the difference between the old United States dollar price and the new one. The cause of this claim can be contributed to “Unexpected changes in exchange, interest and inflation rates”.

Claim no. 11: Type – Cost

The contractor introduced a cost claim due to the sudden and unexpected increase in steel prices from 1200 EGP/ton to 3000 EGP/ton. The cause of this claim can be contributed to “Unexpected change in materials prices”.

Claim no. 12: Type – Cost

Stainless steel sheets were used for cladding whose caliber was not specified in the contract documents. The consultant refused the contractor’s sample. This caused a claim that can be contributed to “Inferior quality of design, drawings and / or specifications” and “unbalanced bidding, underestimation and incompetence of contractors”.

Claim no. 13: Type – Cost

Contractor introduced a claim asking for cost of overhead costs in the period of work stoppage. The cause of this claim can be contributed to “acceleration and stop-and-go operations”.

Claim no. 14: Type – Time

The owner contracted with a new consultant after the second phase and the project was delayed due to review of designs, redesign and new works by the new consultant. The cause of this claim can be contributed to “variations initiated by the owner/consultant” and to “Inferior quality of design, drawings and / or specifications”.

Claim no. 15: Type – Time

Due to variations that happened by the new consultant to solve project problems, the contractor introduced prices for new items in a claim. The cause of this claim can be contributed to “variations initiated by the owner/consultant”.

ANALYSIS OF CASE STUDY OUTCOMES

The analysis of a qualitative research method such as case studies can be conducted in a quantitative manner (Hussey and Hussey 1997). Therefore, the frequency of each cause of claim, as termed in the modified list of causes in Table 2, were counted and shown in Table 3. A total of 31 case claims were discussed in the previous section (8 in project one, 8 in project two and 15 in project three). There were 39 causes attributed to these claims, as some of the causes were repeated. Only one cause was not found in the modified list of causes that was due to an earthquake. The reason for this is because earthquakes and Force Majeure in general are rare to occur in Egypt.

The most frequent cause was by far “variations initiated by owner / consultant” with 19 times out of 39 (approximately 49% of occurrences). The second most frequent cause was “inferior quality of design, drawings and / or specifications” with 8 occurrences (about 21% of occurrences). The third and fourth causes were “delays of approval of shop drawings, instructions and decision making” and “stakeholders involved in the project” with 3 and 2 occurrences (about 8% and 5%), respectively.

Table 3: Frequency of Claim Reasons Resulting from Cases Studies

No.	Causes of Claims	Case Study			Total
		1	2	3	
1	Delays in payments to contractors and resulting cash problems during construction				0
2	Inferior quality of design, drawings and / or specifications		2	6	8
3	Contract documents have errors, defects and omissions	1			1
4	Delays of approval of shop drawings, instructions and decision making		1	2	3
5	Faulty and / or late owner-supplied equipment and material				0
6	Stakeholders involved in the project		1	1	2
7	Variations initiated by the owner/consultant (additive/deductive)	7	5	7	19
8	Acceleration and stop-and-go operations			1	1
9	Delay of Owner representative/ consultant in inspection of work				0
10	Unbalanced bidding , underestimation and incompetence of contractors			1	1
11	Insufficient time for bid preparation and inadequate investigation before bidding			1	1
12	Restricted access				0
13	Relatively low profitability of the construction industry				0
14	Changed conditions		1		1
15	Increase of complexity and scale of building process				0
16	Unexpected changes in exchange, interest, and inflation rate			1	1
17	Unexpected change in materials prices			1	1
Total					39

To further analyze the most important causes, a Pareto Analysis was conducted (PMBOK 2004). The causes were sorted in a descending order and the cumulative frequencies and percentages were computed. Figure 1 shows the Pareto Analysis of the causes of claims in the case studies. By applying the 80/20 rule, it was found that the three first causes “variations initiated by owner / consultant”, “inferior quality of design, drawings and / or specifications” and “delays of approval of shop drawings, instructions and decision making” contributed to around 80% of the occurrences (problems). These 3 causes, out of 18 (including force majeure), contributed to about 17% of the causes. Thus, the 80/20 rule seems to apply and these three reasons can be considered as the vital few, that if addressed should reduce approximately 80% of claims. It should be noted that these findings should not be statistically generalized, but are investigative only.

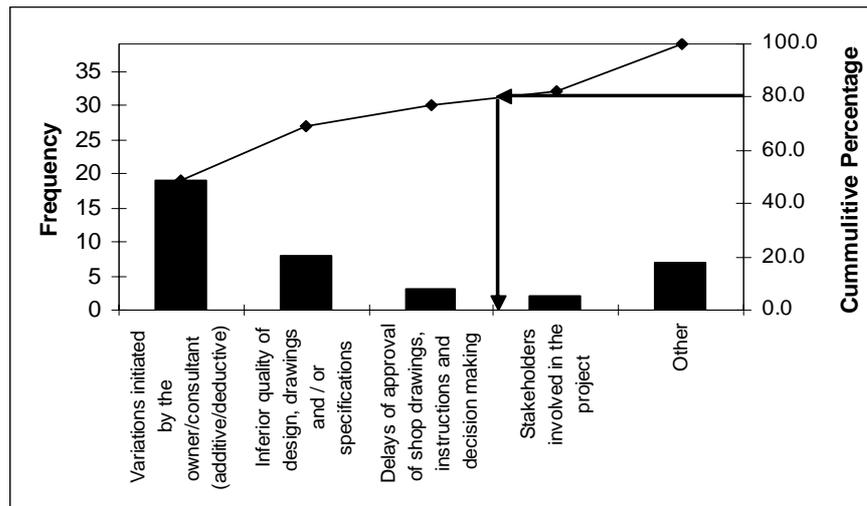


Figure1: A Pareto Analysis of the Causes of Claims in the Case Studies

CONCLUSION AND RECOMMENDATIONS

Claims are considered one of the most importance items that could cause a harmful effect in organizations and for the construction industry. The objective of this paper is to investigate the causes of claims Egyptian construction. The identification of such causes can assist in preventing claims. This is achieved through identifying a list of causes from international literature, then modifying the list to suit Egyptian construction through expert interviews. Three case studies were utilized to further investigate the occurrence of each cause in the project. A total of 31 case claims and 39 causes were discussed. The most frequent cause was by far “variations initiated by owner / consultant” with 19 times out of 39 (approximately 49% of occurrences). The second most frequent cause was “inferior quality of design, drawings and / or specifications” with 8 occurrences (about 21% of occurrences). The third and fourth causes were “delays of approval of shop drawings, instructions and decision making” and “stakeholders involved in the project” with 3 and 2 occurrences (about 8% and 5%), respectively. Furthermore, a Pareto Analysis showed that the 80/20 rule applies to the causes identified and the three most important causes that represent about 20% of the causes result in 80% of the problems, and can thus be considered as the critical few that need to be addressed. It should be noted that these findings are investigative and statistically limited. It is recommended that to reduce claims owners need to effectively manifest their needs and requirements before designs are conducted. Consultants should give special care to designs and provide quality designs that have been thoroughly reviewed. Furthermore, consultants need to give special care to the review and approval of shop drawings.

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